REMARKS

This document is filed in reply to the Office Action dated June 30, 2008 ("Office Action").

Applicants have amended claims 1-27 to more distinctly claim the invention. Support for "pharmaceutically acceptable auxiliary or carrier" recited in claim 1 appears in the Specification, at page 6, lines 19-20. Support for amendment to claim 14 can be found in the Specification, at page 2, lines 9-19, and page 27, lines 21-24. Applicants have also added new claim 28, support for which appears in the Specification, at pages 6-7, carryover paragraph and page 25, lines 6-9. No new matter has been introduced.

Upon entry of the proposed amendments, claims 1-28 will be pending and under examination. Applicants respectfully request that the Examiner reconsider this application in view of the following remarks.

35 U.S.C. § 102 Rejections

Claims 1-13 were rejected as being anticipated over US Patent 7060433 to Kinsella ("Kinsella"). See the Office Action, page 3, lines 18-22. Claim 1 covers a drug containing an expression vector containing a CD9 gene as the active ingredient. According to the Examiner, Kinsella describes an expression vector having a CD9 gene. It is his position that this vector is covered by claim 1 and therefore renders claim 1 non-patentable.

Applicants would like to point out that the Kinsella expression vector is used as an agent for drug screening purposes. See column 1, paragraph 2. It is not used as a therapeutically active ingredient in a drug for treating a disease as claimed in claim 1. In the sole interest of moving this case forward, Applicants have amended claim 1 to more clearly distinguish the claimed drug from the Kinsella expression vector.

In view of the above amendment and remarks, Applicants submit that claim 1 is novel over Kinsella. Claims 2-13 depend from claim 1. For at least the same reasons, they are also novel over Kinsella.

35 U.S.C. § 112 Rejections

Claims 14-27 were rejected for not complying with the enablement requirement. See the Office Action, page 3, lines 3-10. The Examiner rejected the claims on a number of grounds. Applicants will address each below.

First, it is the Examiner's position that the claims, drawn to methods for preventing or treating heart disease by expressing a CD9 gene in the heart, are overly broad as they cover "a method for preventing or treating any heart diseases." See the Office Action, page 3, lines 14-19.

In the sole interest of moving this case forward, Applicants have amended independent claim 14 and limited the heart diseases to those characterized by myocardial infarction, hypertrophy, arrhythmia, or tachyacardia. In this connection, Applicants would like to point out that the Specification provides both ample general teaching (see e.g., page 7, line 15 through page 9, line 16) and specific working examples (e.g., Example 6, pages 24-27) for expressing CD9 to treat heart diseases characterized by myocardial infarction, hypertrophy, arrhythmia, or tachyacardia. For example, the data presented in Example 6 showed that "gene-transferring of CD9 into heart suppresses cardiac hypertrophy and tachycardia;" the data in Example 8 showed that the method resulted in "a significant decrease ... in both the myocardial infarction region area ... and fibered area" in the heart. See page 27, lines 20-24, and pages 28-29, carryover paragraph, respectively.

In view of the above amendments and remarks, Applicants submit that the claims 14-27 are enabled for treating heart diseases characterized by myocardial infarction, hypertrophy, arrhythmia, or tachyacardia.

Second, the Examiner rejected the claims on the ground that the claims cover treating heart disease by expressing a CD9 gene in heart "via any and all routes of administration" and therefore are not enabled. See the Office Action, page 3, lines 7-8. In particular, the Office Action stated that "the specification teaches [using] ... adenoviral vector" but not others means. See page 3, lines 19-23.

Applicants would like to point out that the Specification teaches a number of means other than adenoviral vectors for expressing a CD9 gene in the heart. For example, at pages 5-6, carryover paragraph, the Specification teaches a number of means other than adenoviral vector for that purpose. These means include

> virus vector, non-virus vector, plasmid and the like. Examples of the virus vector include ..., adeno-associated virus, retrovirus, herpesvirus, herpes simplex virus, lentivirus, Sendai virus, poxvirus, poliovirus, symbis virus, vaccinia virus and the like. Examples of the non-virus vector include cationic liposome, membrane fusing liposome, cationic polymer and the like. The liposome is a capsule composed of phospholipid having a particle size of several 10 to several 100 nm, and a plasmid containing a CD9 gene in it can be filled in this capsule.

As further described in page 6, lines 2-16 of the Specification, all of these techniques were well known at the time the application was filed and were routine procedures well within the skill of ordinary workers in this field.

It appears to be the Examiner's position that some vectors may not successfully express a CD9 gene in the heart. To that end, the Examiner commented on the suitability of a number of viral expression vectors for dividing cells and for non dividing cells. See the Office Action, page 5, last paragraph.

Applicants would like to point out that enablement of the claims does not require testing the efficacy of each expression vector recited. In fact, the law does not impose such a formidable burden on inventors seeking patent protection. "Appellants (here, Applicants) are not required to disclose every species encompassed by their claims even in an unpredictable art" (emphases added). *In re Angstadt*, 190 USPQ 214, 218 (CCPA 1976). Such a holding is only reasonable, since it is very difficult, if not impossible, to test and disclose all operative species in the chemical and biotechnology fields. The *Angstadt* court stated that, "[w]ithout undue experimentation or effort or expense the combinations which do not work will readily be discovered and, of course, nobody will use them and the claims do no cover them." *Id*, at 219.

It may be possible that a particular vector is inoperative for expressing a CD9 gene in the heart. However, "The presence of inoperative embodiments within the scope

of a claim does not necessarily render a claim nonenabled. The standard is whether a skilled person could determine which embodiments that were conceived, but not yet made, would be inoperative or operative with expenditure of no more effort than is normally required in the art. *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984)" See MPEP 2164.08(b).

As mentioned above, the Specification describes various well known vectors and means for expressing a gene in the heart. Further, it teaches how to express the CD9 gene in the heart of an animal in vivo, and examine the resulting gene expression and therapeutic effect in the heart. See, e.g., Example 6. All of the techniques needed to practice the invention were well known at the time the application was filed. In fact, they were routine procedures well within the skill of ordinary workers in this field. Accordingly, one skilled in the art would know how to determine the efficiency of an expression vector for expressing the CD9 gene in the heart. In view of the laws set forth by the *Angstadt* court, Applicants submit that enablement of the claims at issue does not require testing all types of means and vectors.

Finally, the Examiner commented on a potential safety concern of the claimed method and rejected the claims on this potential safety concern. See the Office Action, page 4, lines 3-12.

> Applicants would like to bring to the Examiner's attention that
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> it is improper for Office personnel to request evidence of safety in the treatment of humans, or regarding the degree of effectiveness. See *In re Sichert*, 566 F.2d 1154, 196 USPQ 209 (CCPA 1977); *In re Hartop*, 311 F.2d 249, 135 USPQ 419 (CCPA 1962); *In re Anthony*, 414 F.2d 1383, 162 USPQ 594 (CCPA 1969); *In re Watson*, 517 F.2d 465, 186 USPQ 11 (CCPA 1975); *In re Krimmel*, 292 F.2d 948, 130 USPQ 215 (CCPA 1961); *Ex parte Jovanovics*, 211 USPQ 907 (Bd. Pat. App. & Inter. 1981).

See MPEP 2107.03V, emphases added. In the same section, the MPEP further provides "The Office must confine its review of patent applications to the statutory requirements of the patent law. Other agencies of the government have been assigned the responsibility of ensuring conformance to standards established by statute for the advertisement, use,

sale or distribution of drugs." In view of these clear guidelines, Applicants submit that the Examiner's ground for rejection is not proper.

In sum, the Specification provides general guidance and specific working examples showing how to use the claimed methods. All of the techniques needed to practice the invention were well known at the time the application was filed. They are routine procedures well within the skill of ordinary workers in this field. Alternatively, as discussed above, Applicants have provided a reasonable amount of guidance in the Specification as to how to perform required experimentation. For these reasons, it is submitted that the quantity of necessary experimentation, even if considerable, is permissible.

In view of the above remarks, Applicants submit that claim 14 meets the enablement requirement. Claims 15-27 and new claim 28 depend from claim 14. For at least the same reasons, they also meet the enablement requirement.

New claim 28, dependent from amended claim 14, is drawn to a method for treating a heart disease that is characterized by myocardial infarction, hypertrophy, arrhythmia, or tachyacardia. The method includes a step of directly administering an adenoviral expression vector containing a sequence encoding a CD9 protein to a cardiac muscle in the heart. As the Examiner acknowledged, the Specification is enabling for this method. See page 3, lines 3-6. Thus, it is submitted that new claim 28 is enabled on this independent ground.

Conclusion

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The excess claims fee in the amount of $26 and the Petition for Extension of Time fee in the amount of $65 are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization.

Please apply any other charges or credits to Deposit Account No. 50-4189, referencing Attorney Docket No. 55801-003US1.

Respectfully submitted,

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